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ABSTRACT

This study investigates the interaction of three cognitive (functional, constructive, dramatic) and three social (solitary, parallel, group) dimensions of free play activities and their stability over time among boys and girls in a preschool setting. Subjects were 18 children attending a university preschool in Southwestern Ontario. Data for each child were collected in 1-minute daily observations for two 3-week periods, three months apart. Analysis of variance indicated that four activities changed in duration over time but preferred activities remained nearly identical. Cognitive dimensions of play with vehicles and blocks differed over time. Males played more with vehicles and sand and water, and spent less time in painting and art construction than females. Findings for sex and types of play in a particular activity were stable over time. The degree of "freedom" in free play appears to be influenced by available materials. For instance, group and dramatic play may be inhibited by the availability of art activities, which appears to encourage non-social and constructive behaviors. Findings are seen to validate results of earlier studies on children's free play activities. Implications for educational programs and recommendations for further research are indicated. (Author/RH)

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The Effects of Ecological Setting on the Cognitive and Social Play Behaviors of Preschoolers

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Recently, Rubin and his colleagues (1977a, b; Rubin, Maioni & Hornung, 1976; Rubin, Watson, & Jambor, 1978) have observed the free play behaviors of preschool and kindergarten children in a variety of settings. By utilizing an observational format which nests the Smilansky (1968) categories of cognitive play (i.e., functional, constructive, and dramatic play, and games with rules) within the Parten (1932) categories of social participation (i.e., unoccupied and onlooker behaviors, solitary, parallel, associative, and cooperative play), Rubin has found both age and social class differences in young children's free play behaviors. For example, with regard to age differences vis-à-vis the Parten scale, it has been reported that preschoolers engage in significantly more unoccupied, onlooker, and solitary play, and in less group (i.e., associative and cooperative) play than kindergarten children. Concerning the Smilansky categories, kindergarten children have been found to display significantly more dramatic and less functional (sensory-motor) play than preschoolers. Finally, using the nested play scale, preschoolers have been found to engage in significantly more solitary-functional and parallel-functional, and in less parallel-constructive, parallel-dramatic, and group-dramatic activity than kindergarten children. It should be noted that these studies report age <u>differences</u> rather than age <u>changes</u> in the above play categories. However, a recent report (Rubin & Krasnor, Note 1) revealed the Parten, Smilansky, and nested play schemes to be valid indices of age change in that preschool children, over the course of four months, displayed progressively more mature play patterns.

While all of the above investigations provided a starting point for the collection of normative free play data in children, it is possible that the results of future reports may vary from those just cited. Social and cognitive play variation from setting to setting has already been reported in the literature. For example, Barnes (1971) indicated that the preschoolers he observed were less socially oriented than those originally studied by Parten (1932). Rubin and Bryant (Note 2) more recently indicated that children attending a Montessori school participated in significantly more solitary- and parallel-constructive play and in less group-functional and dramatic play than their agemates who attended a traditional nursery school. One possible explanation for such variation stems from the curricular materials and activities available to children attending different schools. Parten (1933) had earlier noted that certain activities elicit particular forms of play. For example, she reported house equipment to elicit the most associative and cooperative play in preschoolers. More recently, Quilitch and Risley (1973) indicated that crayons, books, and puzzles encouraged a low degree of social behavior in elementary schoolers. While both of the above studies cited the relevance of toys and activities to the Parten social play categories, there are few such data concerning either cognitive (Smilansky, 1968) or social-cognitive (e.g., Rubin, 1977a) play. Thus, one purpose of this study was to examine the behavioral effects of the ten most preferred free play activities in a preschool setting. Moreover, the stability of social and cognitive play form elicitation by specific activities was examined over a three month period. Such a procedure allowed for a reliability assessment concerning the impact of activities on play. Descriptive data concerning the social and cognitive play value of the activities available within a single preschool were thus twice collected. In addition, sex differences in the use of the particular materials were examined.

Method

Subjects

Eighteen middle-class children (11 males, 7 females) attending a university preschool in Southwestern Ontario constituted the subject pool. The mean age of the group was 49.08 mos. (range = 37.5 mos. to 60 mos.)

Procedure

The children were observed during free play each day for two 3-week periods, three months apart. Each child was twice observed for 15 one-minute time samples following the procedures outlined in Rubin et. al. (1978). Briefly, each subject's behavior was classified on a checklist such that the form of cognitive play (functional, constructive, dramatic, games with rules) within each social play (solitary, parallel, group) category was denoted along with its duration in seconds (to the nearest 5 secs.). Each time sample also included precise notation of the type of play activity (e.g.s, vehicles, painting). A typical example of a one-minute protocol may be illustrated as follows: child in solitary-functional play in sand (10 secs.); solitary-constructive play building a road in the sand (35 secs.); and solitary-dramatic play "driving" a small truck down the sand road (15 secs.) .

Results and Discussion

The 10 activities in which children engaged for the greatest length of time over the first time period were vehicles, playdough, painting, art construction, houseplay, puzzles, sand and water play, blocks, letters and numbers, and "science" respectively. For Time 2 the activities of greatest duration were sand and water play, painting, vehicles, blocks, art construction, houseplay, playdough, construction toys, letters and numbers, and puzzles respectively. Sex (2) x social play (3) x cognitive play (3) x time (2) repeated measures

ANOVAs were carried out separately for each activity. Since the focus of the study was on how children played with particular activities, the Parten categories of unoccupied and onlooker behaviors were excluded from the analysis. Moreover, since games with rules rarely occurred, this Smilansky category was not subjected to analysis. There were four significant activity preference changes over time. Thus, the duration of time children played with puzzles and playdough significantly decreased from Time 1 to Time 2, F (1,16) = 11.64, $p < .01$ and F (1,16) = 6.43, $p < .05$ respectively. Conversely, there was a significant increase in play with construction toys, F (1,16) = 8.99, $p < .01$ and with sand and water play, F (1,16) = 7.31, $p < .01$.

These changes may have been the result of a major modification in the physical layout of the preschool between periods one and two. During Time 1, the workbench, sandbox, and water trough were housed in one room. Due to staff limitations, this room was accessible to the children for only half of each morning. However, in the period between observations a wall was removed connecting the "sand" room to an "art" room. This allowed the above activities to be available for the full morning period. The Time 2 observations might, thus, better reflect the children's free choice behaviors. It is important to note that the "top ten" activity choices, regardless of order, were essentially identical for both periods.

More important to the question at hand was the discovery of how children engaged in particular activities. For purposes of description, the solitary and parallel play categories were coded as "non-social" behaviors while associative and cooperative play were labelled as "social" behaviors. The ANOVAs revealed a lack of change over time in the preferred modes of play for 9 of the 11 activities cited above. The two exceptions to this trend were blocks and vehicles. For vehicles, a significant time x cognitive play interaction, $F(2,32) = 3.91$, $p < .05$ followed by dependent t-tests indicated

dramatic play to be the most preferred form of cognitive play behavior for Time I. During Time II, however, dramatic play continued to be more prevalent than constructive play, but the difference between functional and dramatic play only approached significance, $t = 1.77$, $p < .09$. For both periods there were no differences between the duration of constructive and functional play during vehicle play.

A significant time x cognitive play interaction was likewise found for block activities, $F(2,32) = 6.85$, $p < .001$. At Time I, no significant differences were noted between the observed amounts of functional, constructive, and dramatic play. However, at Time II, constructive play was significantly preferred to both functional, $t(17) = 3.37$, $p < .005$, and dramatic play, $t(17) = 99.00$, $p < .001$.

Since the changes over time were minimal and concerned neither sex nor the social play nor the combined social-cognitive play categories, the data were pooled to provide a global, descriptive picture of the forms of play elicited by the 11 preferred activities. Table 1 presents the percentage of time the children played in a particular social or cognitive manner in each of the activities. Table 2 indicates sex, social play, cognitive play, and social-cognitive play differences for each activity.[1] The Table 2 data are based on the sex, social play, and cognitive play main effects and the social x cognitive play interactions. Where significant, the ANOVAs were followed up by the computation of dependent t - test multiple comparisons ($p < .05$). The one series of multiple comparisons following a significant social x cognitive play interaction concerned activity with blocks. Post-hoc multiple t - tests revealed that when children were playing constructively with blocks, the incidence of solitary and parallel play exceeded that of group play. However, when playing dramatically with blocks, group play exceeded the two non-social categories. No other comparisons were significant.

Insert Table 1 and 2 Here

As reported in earlier studies, males engaged in significantly more vehicle and sand and water play, and in less painting and art construction than their female counterparts (Parten, 1933; Rubin, 1977 b; Shure, 1963). These data may serve to explain the earlier findings that males engage in more parallel-dramatic play (e.g., vehicles) and in less parallel-constructive play (e.g., painting, art construction) than do females (Rubin et al., 1976, 1978).

It is noteworthy that the findings for sex and for the types of play children engaged in given a particular activity were stable over a 3 month period. These data have obvious implications for those who investigate the "free play" behaviors of young children. It would appear as if the degree of "freedom" is somewhat determined by the materials available to children. For example, group and dramatic play may be inhibited by the availability of art activities. Such activities appear to encourage non-social and constructive behaviors. One may argue that the findings reported herein are specific to a particular preschool. However, for the most part, the data are very similar to those of Parten (1933) and more recently to those of Rubin (1977b). In both of these reports the ten favored activities were essentially identical to those specified in the present study. Moreover, the manner in which children played with particular materials was similar from one report to the next. For example, in the more recent Rubin (1977b) paper, the author gathered frequency (rather than duration) data concerning the ways with which children interacted with particular preschool materials. Rubin found art and puzzle activities to be non-social but constructive in nature -- findings replicated herein. Since these earlier reports were carried out with different groups of children and in different settings, the generalizability of the present data is supported.

The present study's findings appear significant for those who plan educational programs for young children. For example, it was discovered that

group-dramatic play was inhibited by the presence of sand and water, puzzles, and art activities. This form of play has recently been suggested, by some, to contribute significantly to the development of social competence and perspective taking skills (c.f., Rubin & Pepler in press, for a review of this research). For teachers who allow children a free choice of activities and who aspire to promote social skill development, it is thus essential to stock the classrooms with dramatic play eliciting materials (e.g.s, vehicles, dress-up materials). Alternately, professionals working with children might do well to initiate sociodramatic activities or social forms of play with materials generally not used in these ways. This may allow for a more creative use of preschool materials. Preschools which aim to foster the development of construction and problem-solving skills should have an ample sampling of puzzles and blocks.

That the ecological setting has impact on children is amply demonstrated in the senior author's recent study in which play in a Montessori vs. a social-skills oriented program were compared. Significantly more solitary- and parallel-constructive play and less group-constructive and dramatic play was found in the Montessori class (Rubin & Bryant, Note 2). Since Montessori schools are generally stocked with puzzle-type materials, and since the founder of this curriculum believed dramatic activities to be unrealistic and "pathological" (Pulaski, 1971), the above findings should not be surprising. One next step might be to examine the effects of the Montessori "prepared environment" on the development of social skills in young children.

In summary, the present study provided an extension to the growing literature concerning the play behaviors of young children. It is obvious from the present data base that future investigations concerning child's play more carefully consider the importance of ecological factors when reporting age, sex, and/or differences purportedly due to variations in educational programs.

Footnotes

This study is based, in part, on the junior author's Bachelor's Thesis in psychology at the University of Waterloo. Requests for reprints should be addressed to Kenneth H. Rubin, Department of Psychology, University of Waterloo, Waterloo, Ontario N2L 3G1

[1]ANOVA (F - values) results are available from the first author upon request.

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Table 1

Preferred Social and Cognitive Modes of Play

for each of the

Eleven Most Popular Toys and Activities

Activity	% of Social Play		% of Cognitive Play		
	Non-social	Social	F	C	D
1. Vehicles	46.98	53.02	7.95	11.63	80.41
2. Playdough	80.59	19.41	54.85	41.08	4.07
3. Painting	94.19	5.81	13.03	86.97	
4. Art Construction	100.00		6.42	93.58	
5. Housenlay	54.26	45.74	5.05		94.95
6. Puzzles	60.72	39.28		100.0	
7. Sand and Water	96.31	3.69	35.79	61.44	4.98
8. Blocks	72.4	27.6	12.99	64.94	22.08
9. Letters and Numbers	59.38	40.62	13.28	71.09	15.63
10. "Science"	100.00		100.00		
11. Construction Toys	86.52	13.48	39.33	59.55	1.12

Non-social = solitary-parallel, social = group,
F = functional, C = constructive, D = dramatic

Table 2

Profile of Sex and Play Differences for Specific Activities

	Sex[1]	Social[1]	Cognitive[1]
Vehicles	M>F		D>F=C (males only)
Playdough		S=P>G	F=C>D
Painting	F>M	P>S>G	C>F>D[2]
Art			
Construction	F>M	P>S>G	C>F>D[3]
Houseplay			D>F>C
Puzzles			C>F=D
Sand and Water	M>F	P>S>G	F>C>D[4]
Blocks			C>F=D
Letters, Numbers			C>F=D
Science Construction Toys			F>C=D

[1] M=male; F=female; S=solitary; P=parallel; G=Group; F=functional; C=constructive; D=dramatic

[2] parallel-constructive preferred to all other combined categories

[3] solitary- and parallel-constructive preferred to all other categories

[4] parallel-functional and parallel-constructive preferred to all other categories